

James DiMaio and Dr. Alan Page
96 Hunt Road
West Brookfield, Massachusetts 01585
July 7, 2010

Department of Energy Resources
Attn: Commissioner Philip Giudice
100 Cambridge Street, Suite 1020
Boston, Massachusetts 02114

Dear Commissioner Giudice:

Re: Manomet: Biomass Sustainability and Carbon Policy Study Response

Thank you for the opportunity to respond to the recently released "*Biomass Sustainability and Carbon Policy Study*" prepared by the Manomet Center for Conservation Sciences. We, Alan Page, Ph.D. in Tree Physiology and James DiMaio with a BS in Forestry are Massachusetts Licensed Foresters with almost 90 years of combined Massachusetts, national, and international natural resource experience, are commenting as concerned private citizens.

We congratulate DOER for attempting to undertake the critically important study of sustainably providing for Massachusetts' energy needs and also considering the environmental, social, and economic consequences of this poorly understood area. Of particular note is the study's conclusion that all current energy systems that solely produce electricity are inappropriate because they are too inefficient and release at least 5 times as much carbon per unit of electricity as would be the case for well distributed combined heat and power (CHP) systems. We also recognize that there is a wealth of important data within the report that took considerable time and effort by Manomet to compile that we and others will need more time to fully analyze.

Our initial comments are summarized and address essential points in relationship to energy, technology, and sustainability. We look forward to continued dialog with you about the many substantive issues that should have more coverage than we are able to provide here.

Your contract with Manomet provided the opportunity to relate to the public the current condition and trends of the climate crisis, carbon dioxide emissions, complete disclosure of the environmental consequences of the fuels used for energy, and role and position that forests could play in providing a long-term sustainable solution. Many of these areas were not even mentioned in the study. The opportunity still exists and must not be lost to describe proactive, leading, visionary measures to holistically address measures critical to the maintenance of biospheric sustainability. We use the term **Climate Crisis** because we believe that there must be effective timely action taken to address this unfolding calamity.

We would like to express our concern that three members of the Manomet Center for Conservation Sciences, the Biomass Energy Resource Center (BERC), and Pinchot Institute for Conservation have issued statements and press releases stating that the continued use of ancient fossil fuels are not desirable, and certainly not when compared to using wood residues in appropriate settings. Also, the European Climate Foundation conducted a thorough study on biomass sustainability and carbon accounting, which was released on the same day as the Manomet Study. Although this study used terminology which was very similar to the Manomet Study (i.e., carbon debt, etc.), the European Climate Foundation study came to the exact opposite conclusions. They found that biomass was 98% carbon neutral and that biomass for power holds a very large untapped potential for Europe.

We would like to share in a short narrative why and how we have come to different conclusions from those presented in administration summaries and as part of that narrative we will provide sources for the documentation of these conclusions.

Thank you in advance for efforts taken to deal with this document. Please feel free to contact Dr. Page or Mr. DiMaio at either (413)-323-4401 (508) 867-0508 to answer questions or provide additional details to our response to the Manomet Report.

Sincerely,

/S/ James DiMaio
James DiMaio

/S/ Alan Page
Dr. Alan Page

Attachment

A Narrative About Forests in General with Particular Reference to MASSACHUSETTS:

Our experience spans many continents and at least four decades, with study that drew on documents hundreds of years old. Each of us has chosen the profession we have because of our commitment to the cause of caring for land with trees growing on it and the people that dwell in the communities around these lands. During our tenure we have watched the progress of the planned destruction of rural communities by those who would use the labor of farm and forest people more efficiently, Ritchie, 1978. Most of the forest areas we have encountered are bounded and interwoven with the evidence of past settlement, particularly in Massachusetts. Yet these areas have been cleared completely for agriculture (in the NE USA for sheep grazing) and then abandoned and cut several times for various forest crops, see the Harvard Forest Dioramas of this progression of uses. We have also owned or been involved in the optimistic management of Massachusetts forests and seen the effects of our changing climate and the short term focused economic system that has periodically dominated the operation of the public and private sector.

We understand the unfortunate effects of our debt based currency system on all sustainable activity and have researched the basis of this malady. Unfortunately the short term nature of our business, political and banking systems have served to concentrate the operating capital of our region in the hands of a few extremely focused and powerful entities that now are even legally above the court system of many countries. See “Web of Debt” by Ellen Brown

We believe that the problem with Massachusetts forest policy and the energy policies that are related to it flow from logical fallacies and public biases that are easy to accept and hard to refute.

A Statement about Sustainability - What it is and Why It is Important:

We define sustainability as the well-balanced mix of environmental, social, and economic conditions that can and should exist forever in the absence of climate change.

A Summary of the Major Shortcomings of the Manomet Report:

- The summary and report seems to promote continue reliance on non-renewable ancient fossil fuels as Massachusetts preferred energy sources.
- A primary basis of the report’s conclusion was a comparison of the carbon debt per BTU by *various fuels*. *The report did not factor that forest conditions will result in the release of carbon due to natural processes. Therefore, coal, oil, natural gas, and nuclear energy system’s carbon debt should include the natural release of carbon from the forest and all of the associated energy release from extraction, processing, transportation, storage, and remediation.*
- The report failed to disclose the irretrievable and irreversible environmental consequences of extracting and releasing effectively stored ancient carbon. A few examples are the present Gulf Deepwater Oil Disaster, coal mining which results in removing mountain tops, uncontrollable

below surface and waste pile burning, release of methane, release of acidic and heavy metal contaminated water from mine shafts, mine and spoil pile subsidence, un-reclaimable waste piles, and mountain top over-burden valley filling.

- The report incorrectly referred to information in Dr. Kelty's 2008 report on wood availability. Manomet stated that 900,000 green tons/year of biomass could be sustainably produced in Massachusetts. The Kelty report was based on dry tons vs. green tons. Therefore, the Kelty report's annual sustainable 900,000 dry tons of forest biomass is not consistent with and does not add support for the minimal sustainable biomass amounts reported as being available by Manomet.
- The report was based on:
 - Past and current energy systems as opposed to potential carbon negative energy systems
 - Current conditions of the forests as opposed to potential well managed forest outcomes
 - Current economics of forest biomass as opposed to potential of a vibrant rural economy of which biomass is a small part coming from residues.
 - Current level of forest threats as opposed to those looming from the global economy and the climate crisis
- Too much emphasis was given to the estimated \$1 to \$2 per ton (presently an average of \$3 per ton) paid to landowners for their biomass. In the near long-run, the current economic principles will be meaningless.
- Forest statistics were biased towards taking every opportunity to reduce the amount of available sustainable biomass, barely mentioning the amount of total growing stock, current and future mortality rates, and growth potential.
- The report completely missed that, in general, Massachusetts' forests are grossly overstocked with abundant amounts of low quality/low value/low vigor material growing among dominant and co-dominant trees. These forests are extremely slow-growing, highly susceptible to climatic threats, and there is virtually no market for a steady flow of these low quality trees.
- Catastrophic events such as the 2008 ice storm, 2010 flooding, 1938 hurricane, invasive pests that require massive harvesting to attempt to control their spread (the Asian Long-horned Beetle is a recent example in Worcester County), etc. were not considered in the study, which will result in a glut of material that will release in carbon dioxide with no energy recovery. Further, the Manomet study did not mention the effect of the Forest Visioning Process recommendation on the presence of skilled labor and equipment needed to move damaged material. The above catastrophic events will require the ability to respond to disasters. Such response will not be possible if the wood using industry in Massachusetts is further depleted by reductions of areas available for cutting and severe restrictions on logging.

- Appropriate ecosystem-based forest management can provide the ecological services that are essential to sustainability.
- The report mentioned the concept of biochar but it failed to elaborate how biochar could become part of a local carbon negative energy system which could provide a myriad of benefits when compared to the complete burning of wood to ash for energy. Numerous environmental benefits can flow from the small scale production of biochar such as the retention of potential particulate pollution in the char, the reuse of these potential atmospheric pollutants for growing more and better crops, carbon sequestration of at least a third of the feed stock carbon, enhanced soil productivity, reduction of soil nutrient losses, increased soil water holding capacity, improved soil aeration, and improved resistance to fungal attack by plants.

Finally, too much credence was given to present social considerations by some who view the forest predominately for aesthetic and recreation. These people while claiming to be environmentally concerned maintain affluent lifestyles that depend of unsustainable sources of energy and material. Their choices are responsible for causing the USA to have the highest worldwide carbon footprint. These irresponsible individuals must not limit the possibilities for the potentially sustainable rural sectors of the Massachusetts economy.

The following is a summary of the Massachusetts’s Forest Inventory and Analysis (2008)

Net Volume of Live Trees at least 5 inches DBH:	7,753,728,858 cu ft
Average Annual Net Growth of Live Trees at least 5 inches DBH	157,965,555 cu ft
Annual Mortality of Live Trees at least 5 inches DBH:	82,833,175 cu ft
Average Annual Removals of Live Trees at least 5 inches DBH:	36,325,278 cu ft

The respective conversion to green tons:

Net Volume of Live Trees at least 5 inches DBH:	2,423,040,268 tons
Average Annual Net Growth of Live Trees at least 5 inches DBH	4,936,424 tons
Annual Mortality of Live Trees at least 5 inches DBH:	2,588,537 tons
Average Annual Removals of Live Trees at least 5 inches DBH:	1,135,165 tons
Manomet Additional Biomass Recommendations:	low price 150,000 to 850,000 tons

The present estimated annual removals equate to:

- 0.47% of the net volume of live trees at least 5 inches DBH
- 23.00% of the annual net growth of live trees at least 5 inches DBH
- 43.85% of the annual mortality of live trees at least 5 inches DBH

The projected Manomet low price 150,000 ton biomass plus present removals equates to:

- 0.53% of the net volume of live trees at least 5 inches DBH
- 26.00% of the annual net growth of live trees at least 5 inches DBH (3% increase)
- 49.65% of the annual mortality of live trees at least 5 inches DBH

It should be noted that we estimate that there is a considerable amount (many hundreds of thousands of tons) of low quality trees that are left behind after the current annual removals due to low quality and lack of present markets that might unaccounted for in the above statistics. There are also hundreds of thousands of tons of low quality trees that are part of the common excessively overstocked forest of Massachusetts. Thinning these working forests of weak and unresponsive trees will recover predictable mortality, maintain species composition, growth, aesthetics, habitat and watershed values, provide carbon sequestration opportunities, and improve resistance from insects, diseases, and climate change. We also recognize that there are ecosystem services, Forest Cutting Practices Act requirements, and landowner objectives that need to be factored into the sustainable estimation of available forest biomass supply, and particularly a situation where local biochar economies use these residues and put the preserved carbon back on the site of origin to improve the growing conditions. We question whether the Manomet study truly reflects the massive amount of low quality trees that could be available for sustainably providing local for energy needs and maintaining a sustainable forest.

We propose the following measures to sustainably produce energy:

- DOER should thoroughly review the European Report to understand why they came to an opposite conclusion concerning the use of forest biomass.
- Plan for the decommissioning or retrofitting to combined heat and power all electrical energy producing plants
- Require that all new energy producing systems be dispersed within communities to achieve both combined heat and power in the process of becoming carbon negative energy producers. Massachusetts and neighboring communities should supply local organic feedstock for the variety of energy requirements of those communities. Movement of organic residues should increasingly be minimized over time as the local capability grows to effectively use these sources of supply.
- Protect from development the forest and agricultural area needed to generate the fuel and electricity necessary to operate the CHP plants. This includes farm and forest landowner incentives such as no real estate and state taxes, free forest stewardship plans, and landowner monetary incentives to implement said plans, develop systems to ensure that long term projects such as forest management are included within the conceptual framework of the financial community, and provide for payment to working forest owners for all ecosystem services Plan for CHP plants to become biochar

producers as the technology develops. Require that a substantial portion of biochar produced to be returned to the site where the feedstock originated.

- Promulgate the proposed Massachusetts Forest Cutting Practices Act regulations as proposed by the Massachusetts Forestry Committee which include new requirement for silvicultural practices, water quality protection, rare species habitat, biomass acceptable management practices, and provisions to ensure that harvesting levels are not exceeding sustainable landscape levels.
- Appropriately utilize the 2008 Kelty report's data which Manomet has quoted in many places, sustainable forest biomass availability of 900,000 dry tons per year.
- Finally, provide the courageous leadership to openly discuss sustainability, the climate and environmental risks (we do not know what the long-term risks of removing coal, oil, and gas from below the earth's surface), the need to immediately move towards the above recommendations.

We would like to conclude that Massachusetts has an opportunity to be a leader in sustainability, protecting the remaining natural landscape from development, and responsible forest stewardship for multiple ecosystem services including carbon neutral energy. The continued reliance on our stored ancient carbon and the environmental degradation and unknown consequences of obtaining said resources for our society's energy needs is irresponsible and unsustainable.

References: Ritchie, M., 1978, *The Loss of Our Family Farms – Inevitable Results or Conscious Policies?*, League of Rural Voters, Minneapolis, MN